

APPLICANT(S): Gazit et al.
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AMENDMENTS TO THE CLAIMS

Kindly amend the claims as follows:

1. (currently amended) A phased array antenna assembly, adapted for reducing severe radiation hazards to the human body, useful for transmitting and receiving signals while taking into account the indoor electromagnetic field strength, said antenna design comprising[[:]];
 - a. a micro-strip small-size antenna;
 - b. a switching device, having a communicating means with said antenna to select between receiving or transmitting modes, further having a selecting means for phase shift and the receiving/transmitting frequencies;
 - c. a controller adapted to receive inputs from said switching device comprising[[:]];
 - i. coordinating means, adapted to interconnect said switching device with a algorithm-based software; and
 - ii. memory queue that records the optimal path in each indoor environment to each of the associated nodes to said antenna assembly;

wherein said assembly is cost effective in the manner it is adapted for a indoor mass-utilization consisting of low cost materials and components, and further wherein said assembly radiate a limited electromagnetic field in a minimal measure required for communication.
2. (original) The antenna assembly according to claim 1, wherein the indoor electromagnetic field is located in a closed construction selected from house, apartment, large vehicle, aircraft or ship, industrial space or office and further wherein said closed construction comprising a plurality of openings.
3. (original) The antenna assembly according to claim 2, wherein the closed construction comprising obstacles selected from corridors, floors, ceiling, windows, doors or any combination thereof.
4. (original) The antenna assembly according to claim 2, wherein the openings are selected from corridors, floors, ceiling, windows, doors or any combination thereof, and further wherein said openings are the waveguide slots.

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5. (original) The antenna assembly according to claim 1, characterized by that the path loss (L) of the electromagnetic radiation is calculated by the equation:

$$L_1 = 32.1 - 20 \log_{10}(\chi |R_n|) - 20 \log_{10} \left[\frac{1 - (\chi R_n)^2}{1 + (\chi R_n)^2} \right] + 17.8 \log_{10}(X) + 8.6 \log_{10} \left\{ -\ln |R_n \chi| \cdot \left(\frac{\pi n}{d} \right) \cdot \left(\frac{X}{\rho_{\text{bw}}^{(0)} d} \right) \right\}$$

wherein n is the mode number; R_n is the reflection factor for mode number n , and K_n is the wave number for mode n .

6. (original) The antenna assembly according to claim 5, wherein

$$R_n = \frac{K_n - kZ_{EM}}{K_n + kZ_{EM}}$$

characterized by that R_n is the reflection factor for mode number n , and K_n is the wave number for mode n .

7. (currently amended) The antenna assembly according to claim 1, characterized by that antenna creates a main beam lobe, in the manner that $P_{\text{ant}} = P_0 + P_{\text{ls}}$ and $P_{\text{ls}} = f(L_1 * K_{\text{rssi}})$; wherein P_0 – 0 dBm, and P_{ls} – Path loss to the ~~mobile~~ wireless station.

8. (original) The antenna assembly according to claim 1, wherein an ASIC protocol controls the antenna operation in the manner that the antenna is adapted to fit with any RF protocol.

9. (original) A antenna assembly according to claim 8, wherein the ASIC comprising the algorithm of the following steps:

- a. scanning with the first beam for first station;
- b. receiving a signal and writing the RSSI;
- c. proceeding to next beam direction;
- d. getting a max. RSSI or received field strength from said station;
- e. calculating the station virtual distance from the said antenna and adjusting the power level to the correct one;
- f. registering the obtained RSSI and/or level in a memory, wherein the obtained is associated with the beam direction and with the station ID; and
- g. scanning for a plurality of other stations as required.

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10. (original) The antenna assembly according to claim 9, additionally comprising the step of proceeding with other receiving and/or transmitting tasks.
11. (original) The antenna assembly according to claim 8, characterized by that the calculating step is
 on the
$$L_1 = 32.1 - 20 \log_{10}(\chi |R_n|) - 20 \log \left[\frac{1 - (\chi R_n)^2}{1 + (\chi R_n)^2} \right] + 17.8 \log_{10}(\chi) + 8.6 \log_{10} \left\{ -\ln |R_n \chi| \cdot \left(\frac{\pi n}{d} \right) \cdot \left(\frac{\chi}{\rho_{bc}^{(0)} d} \right) \right\}$$
 based
 electromagnetic radiation equation:

wherein n is the mode number; Rn is the reflection factor for mode number n , and Kn is the wave number for mode n .

12. (original) The antenna assembly according to claim 8, characterized by that antenna used is a cell-wall socket (CWS).
13. (previously presented) The antenna assembly according to claim 1, adapted to indoor utilization, wherein either the antenna or its associated clients are interconnected to at least one common network.
14. (original) The antenna assembly according to claim 13, wherein the network is implemented in a plurality of closed constructions, in the manner a network of one closed construction is in communication with at least one another network located in at least one other closed construction.
15. (original) The antenna assembly according to claim 13, wherein a master operator (CWS) is coordinating and/or communicating a plurality of sub-networks.
16. (original) The antenna assembly according to claim 13, characterized by that while one master CWS is busy with an on-going session, selected from any fax, voice, data transaction or any combination thereof, another CWS is used as the coordinating master.
17. (currently amended) The antenna assembly according to claim 13, additionally comprising (a) a calling device that identifies itself with its personal identification number (PIN) to a CWS; (b) installation of the PIN as the calling party number for the exchange by a free CWS; and (c) a

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means of correctly billing the PIN owner. This will cause correct billing of the PIN owner. calling device will identifies itself with its personal identification number (PIN) to the CWS. The free CWS will install the PIN as the calling party number for the exchange. This will cause correct billing of the PIN owner.

18. (currently amended) The antenna assembly according to claim 1, characterized by a phased array antenna comprised of n by m elements with ~~horizontal—vertical and circular polarization~~ any polarization chosen by the user.
19. (currently amended) ~~The phased array antenna as described in Figure 9:~~ A CWS phased array antenna comprising n inputs and n horizontal radiating elements, where n is an integer greater than 1, each of said inputs connected to said horizontal radiating elements via n phase shifters, n dual pole RF switches, and at least one n -pole RF switch, wherein introduction of an RF signal into any one of said inputs generates a directional RF signal from the horizontal radiating elements.
20. (currently amended) ~~The phased array antenna as described in Figure 10:~~ An indoor phased array antenna comprising an $n \times m$ array, where n and m are integers greater than 1, said array comprising:
- a. n inputs;
 - b. $n \times m$ radiating elements;
 - c. n phase shifters;
 - d. n dual pole RF switches; and
 - e. at least one n -pole RF switch,

wherein introduction of an RF signal into any one of said inputs generates a directional RF signal from said radiating elements.

21. (original) A broadband antenna assembly according to claim 1, adapted to operate at a frequency within the band gap of about 900Mhz to about 6Ghz.

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22. (original) The broadband antenna assembly according to claim 20, adapted to operate at a frequency within the band gap of about 2.4GHz to about 5.8GHz.
23. (previously presented) The antenna assembly as defined in claim 1, adapted for mirroring a plurality of main beam lobes, wherein the symmetry of the mirrored beams is referred to a predetermined axis of the plate that comprises the element array.
24. (currently amended) The antenna assembly as defined in claim 1, further comprising an axis perpendicular to the plate that comprises the element array.
25. (currently amended) A phased array antenna according to claim 23, wherein said antenna assembly is adapted for mirroring L beam lobes, ~~wherein~~ L is being any positive even integer number, comprising
- a. a plurality of RF inputs/outputs;
 - b. a plurality of RF switches;
 - c. 1:L splitter modules; and,
 - d. an array of n by m elements with ~~horizontal—vertical and or circular polarization~~ any polarization desired by the user.
26. (original) The phased array antenna according to claim 25, additionally comprising at least one switching module.
27. (original) The phased array antenna according to claim 26, wherein at least a portion of said switching modules is in series.
28. (original) The phased array antenna according to claim 26, wherein at least a portion of said switching modules is in parallel.
29. (currently amended) The phased array antenna according to claim 26, wherein the switching module is an electronic circuit comprising *inter alia* a plurality of p RF signal inlets, a plurality of q RF signal outlets and a plurality of $p+q$ diodes, ~~wherein~~ p and q are being any positive integer numbers[$[\cdot]$], in such a manner that each of said $p+q$ diodes interconnects one of the q inlets with n outlets[$[\cdot]$], ~~wherein~~ n is being any positive integer ~~so~~ such that $1 \leq n \leq q$.

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30. (currently amended) The phased array antenna according to claim 27 ~~29~~, wherein $p = q = 2n$.
31. (currently amended) The phased array antenna according to claim 26, wherein the switching module is an electronic circuit comprising *inter alia* a plurality of p RF signal inlets, a plurality of q RF signal outlets and a plurality of $p+q-1$ diodes; ~~wherein~~, q and p are being any positive even integer numbers[[:]], and further wherein each of said $p+q$ diodes interconnects one of the q inlets with n outlets, such that ~~wherein is~~ $1 \leq n \leq q$ ~~so that~~ and further wherein at least one beam is not mirrored.
32. (currently amended) The phased array antenna according to claim 26, wherein the switching module is an electronic circuit comprising *inter alia* a plurality of $q+1$ RF signal inlets, a plurality of $q+1$ RF signal outlets and a plurality of $(p+1)q$ diodes; ~~wherein~~, q is being any even integer number, in such a manner that each of said pq diodes interconnects one of the q inlets with p outlets; ~~wherein a single central beam is not mirrored; wherein p is being an integer number, and further wherein is such that $1 \leq p \leq q$ and further wherein a single central beam is not mirrored.~~
33. (currently amended) The antenna assembly as defined in claim 1, said assembly comprising:
- a plate comprising the element array;
 - a predetermined axis of said plate;
 - p RF input/outputs;
 - q inlets;
 - a plurality of $p + q$ diodes;
 - interconnection of each of said q inlets with j outlets by means of each of said $p + q$ diodes;
 - at least one RF switch;
 - a plurality of 1:L splitter modules;
 - an array of n by m elements with any polarization desired by the user; and,
 - a plurality of s switching modules adapted for mirroring said plurality of L main beam lobes;

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wherein s , L , D denote the signal, beam and diodes, and further wherein n , m , i and j are any positive integer numbers, and so that $is=2iB=4iD$, and further wherein the symmetry of the mirrored beams is referred to a predetermined axis of said plate, and further wherein said antenna assembly is adapted for mirroring a plurality of L main beam lobes; the symmetry of the mirrored beams is referred to a predetermined axis of the plate that comprises the element array; said antenna comprising *inter alia* p RF input/outputs; the q inlets are interconnected with j outlets by means of each of said $p+q$ diodes; at least one RF switch; a plurality of 1:L splitter modules; an array of n by m elements with horizontal-vertical and or circular polarization and a plurality of s switching modules adapted for mirroring said plurality of L main beam lobes; wherein s , L , D denote the signal, beam and diodes and further wherein n , m , i and j are any positive integer numbers, and so that $is=2iB=4iD$.

34. (canceled)